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REGIONAL TRANSPORTATION AUTHORITY

MARKET LEVEL RIDERSHIP ANALYSIS

April, 1987

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I. PURPOSE, FINDINGS & BACKGROUND

PURPOSE

The purpose of this report is to provide a detailed analysis of ridership changes in the RTA system. The RTA Strategic Planning consultant identified five markets - each with unique characteristics - that provide an understanding of the marketplace and the changing opportunities that face the region.

The markets identified include:

- Traditional CBD-oriented market
- Traditional City-oriented market
- Stable Suburban market
- Growth Suburban market
- CBD Circulation market.

This market characterization has been adopted to examine ridership in this analysis. The service of each service board is divided into its component markets. All service boards serve more than one market. Each market is characterized by how it relates to the RTA system, and by what portion of service in each market is the contribution of each service board. For this report analysis of ridership and some general performance measures is performed at the market level.

FINDINGS

The key findings of this analysis fall into several categories - analysis structure, data availability, and ridership results.

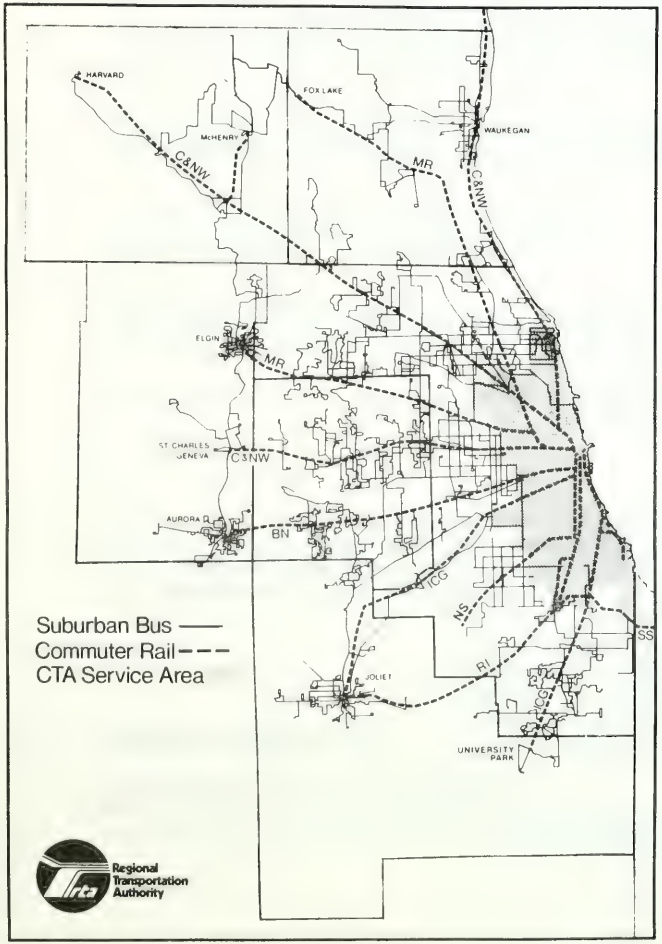
Analysis structure: The structure of using markets as a means for analyzing ridership results appears to work well. It is recommended that this analytical structure be adopted in looking at some of the other issues facing the RTA such as capital programming and cost containment.

Data availability: One major finding in the course of this analysis was that data from the service boards is, in many cases, not available at a level that supports market-driven analysis. The RTA must encourage and support all service boards to pursue the development of improved data collection systems.

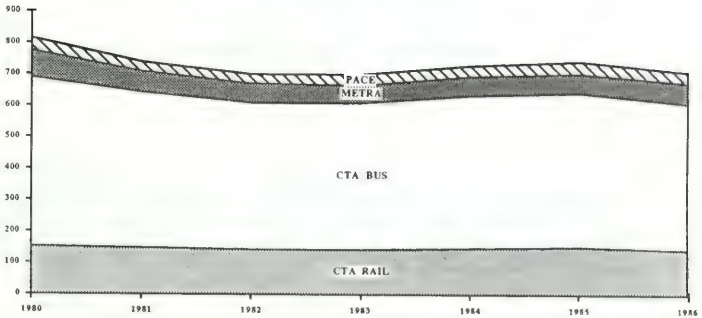
Ridership results: It was possible to develop market level conclusions for all markets except for the City-oriented market and the CBD Circulation market. Detailed findings on these markets will be developed upon completion of the proposed System Structure and Utilization Study. The study would provide a better understanding of the CTA bus system.

The CBD-oriented market showed little ridership decrease from 1985 to 1986 despite the fare increases. This response makes sense because many of the CBD-oriented trips are work trips, and work trips tend to be less sensitive to changes in fare than are other trip types. Both the Stable Suburban and Growth Suburban markets showed significant decreases in ridership from 1985 to 1986. It appears that trips in these markets are more sensitive to fare increases. Because these markets have low market share to start with, cost containment and innovative service options must be a high priority in markets in order to maintain fare and service levels that encourage the expansion or development of market share.

RTA System



RTA Unlinked Passenger Trips
(In Millions)

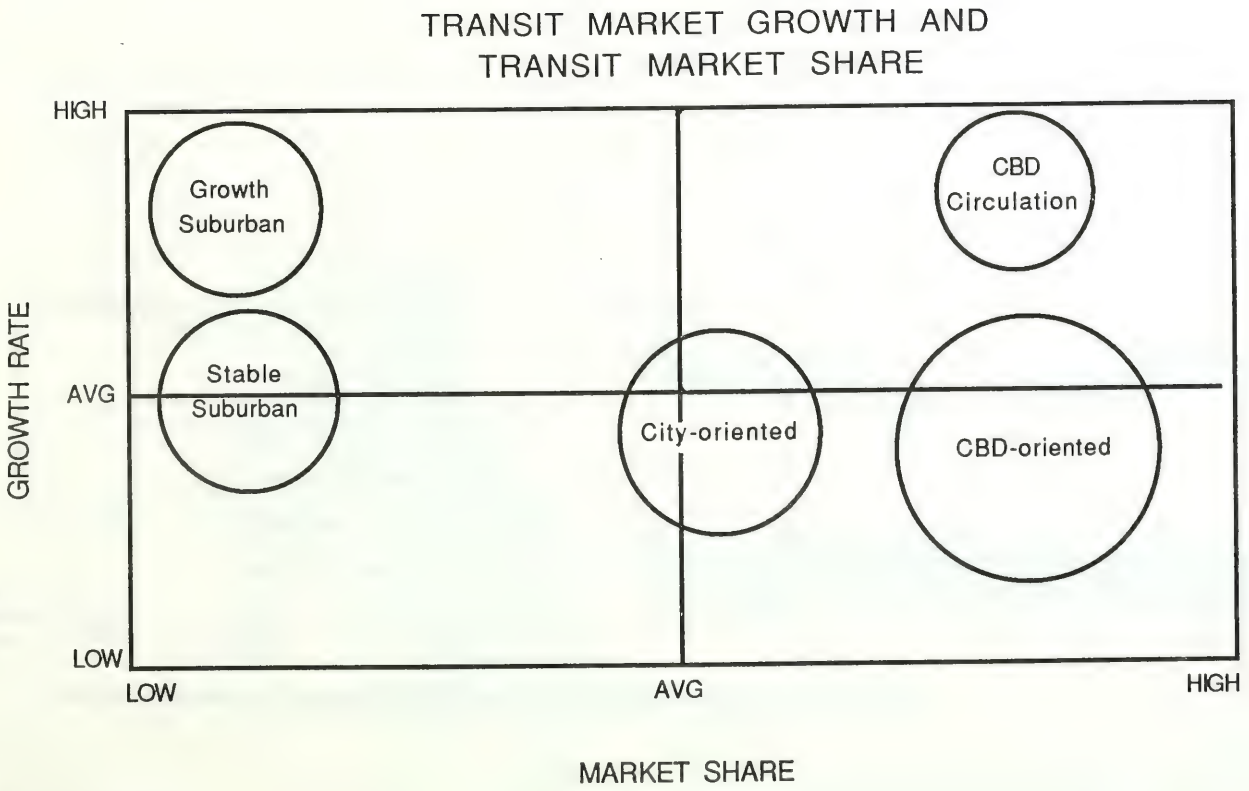


BACKGROUND

- The combined operations of the RTA's three service boards serve the six-county region with:

  - 2,200 rapid transit cars
  - 1,000 commuter rail cars
  - 2,800 buses
  - 1,500 miles of track
  - 375 train stations
  - 712 million annual riders

- The consolidated operating budget of the RTA in 1987 is $ 965 million.


TRANSIT MARKET GROWTH AND
TRANSIT MARKET SHARE
HIGH
AVG
LOW
GROWTH RATE
Growth
Suburban
Stable
Suburban
CBD
Circulation
City-oriented
CBD-oriented
LOW
AVG
HIGH
MARKET SHARE

The Strategic Planning process was initiated by a study performed by Booz-Allen & Hamilton. Their work encompassed an environmental scan, population and employment projections, characterization of markets, and development of long range strategies and investment plans. The population and employment forecasts, and the resultant forecast of transit trips, were used to characterize the markets. Both optimistic and pessimistic population and employment forecasts were developed. The difference between optimistic and pessimistic forecasts highlight the need to monitor performance by market to assure that service is being provided efficiently and effectively in a changing region.

Markets were developed by grouping trip types on the basis of transit market share (transit market share is the percent of all trips in a market taken on transit) and on the projected growth rate.

The markets are characterized as follows:

- Traditional CBD-oriented market - Average projected growth rate and high transit market share.
- Traditional City-oriented market - Average projected growth rate and average transit market share.
- Stable Suburban market - Average projected growth rate and low transit market share.
- Growth Suburban market - High projected growth rate and low transit market share.
- CBD Circulation market - High projected growth rate and high transit market share.

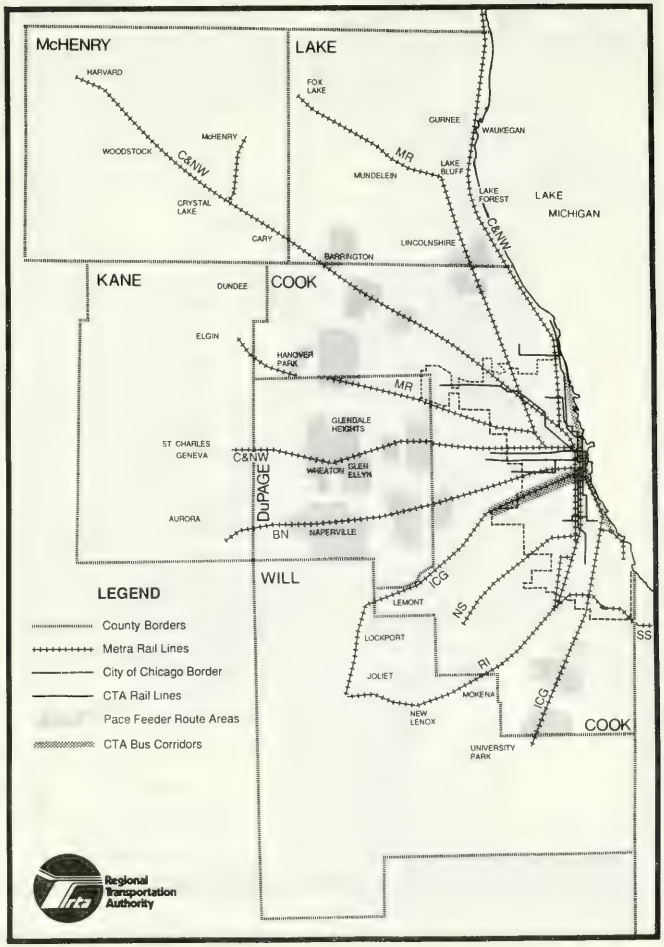
This structure is used as an analytical framework.

II. MARKET DEFINITIONS

Market: TRADITIONAL CENTRAL BUSINESS DISTRICT-ORIENTED MARKET
Recommended Strategy: Protect, Prune, Promote

- Highest transit mode split (approximately 70%) of all markets.
- Backbone of transit - must protect to retain market share.
- Transit infra-structure is basically in place.
- Capable of handling a high growth future.
- Need improved access (feeder bus, parking facilities) and egress (downtown distribution) from line-haul services to protect and promote the CBD-oriented market.
- Selective pruning of more lightly used corridors may have to be considered to maintain or increase market share.
- Contains trips from - outer suburbs to CBD
  - inner suburbs to CBD
  - city to CBD.

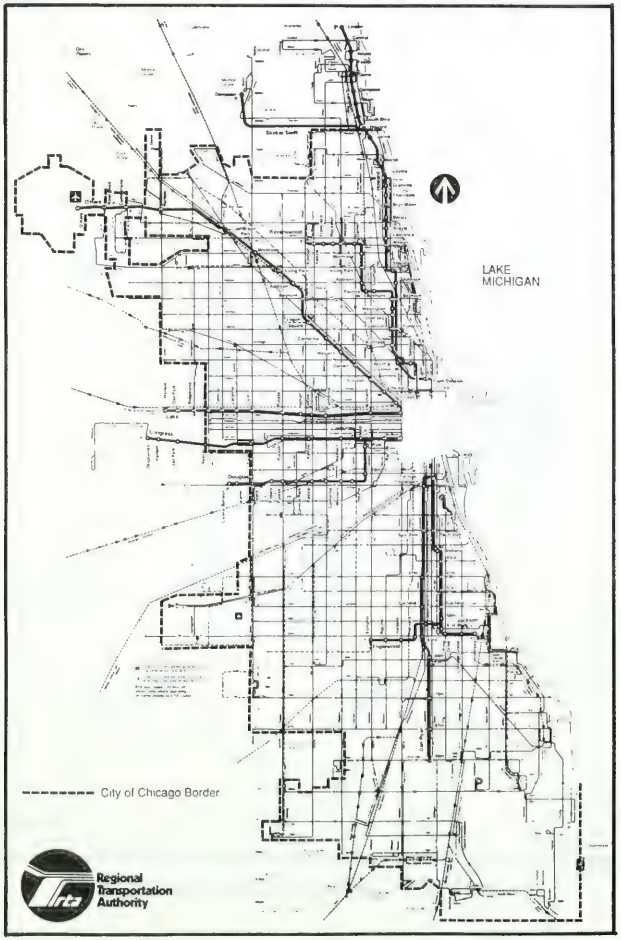
CBD-Oriented Market Service



Market: TRADITIONAL CITY-ORIENTED MARKET
Recommended Strategy: Rationalize, Reorganize, Maintain

- Largest downside swing in transit volume of all markets between the optimistic and pessimistic scenarios. (Potential loss of 15 percent in transit market size). Transit mode share remains relatively stable.
- Changes in population and trip-making should be carefully monitored.
- Many trips in this market require a transfer to complete due to grid route structure. Facilitating the transfer is an important consideration in maintaining/improving market penetration in the city-oriented market.
- Focus must be kept on matching service levels with travel needs.
- Contains trips from - city to city.

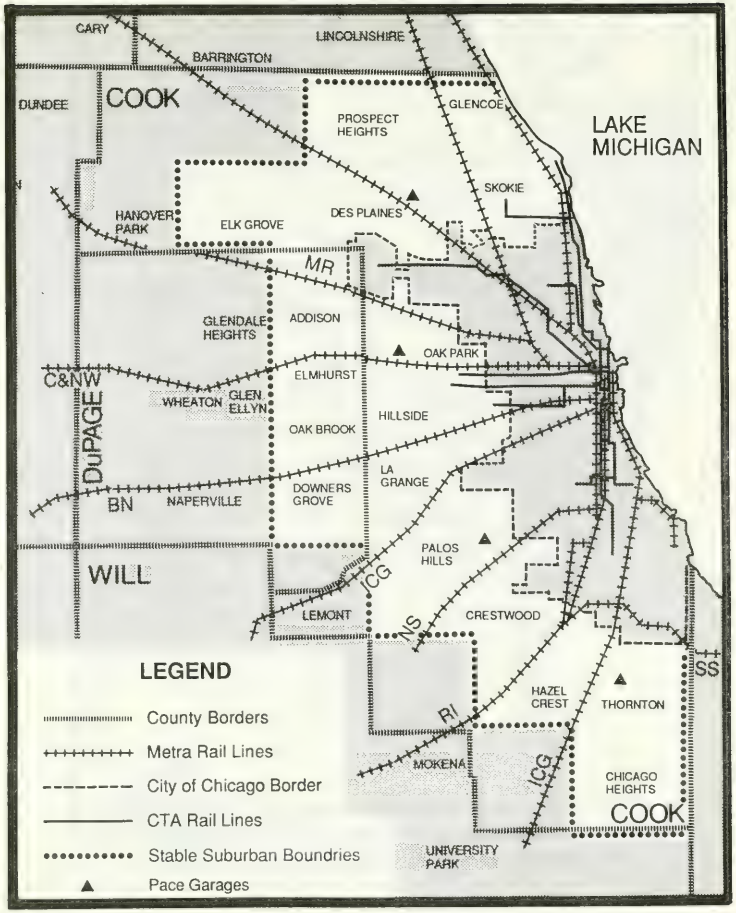
Traditional City-Oriented Market Service



Market: STABLE SUBURBAN MARKET
Recommended Strategy: Consolidate, Coordinate, Extend

- Largest total travel market with small transit share (transit share of approximately 7 percent).
- Market penetration should be higher considering the amount of rail and bus service available.
- Trip-making patterns are dispersed - many origins to many destinations.
- Existing transit services and resources should be consolidated to better penetrate markets that currently are served in a disjointed manner.
- Coordination with city-oriented bus and rail services between suburban operators is essential.
- Contains trips from - inner suburbs to city
  - inner suburbs to inner suburbs.

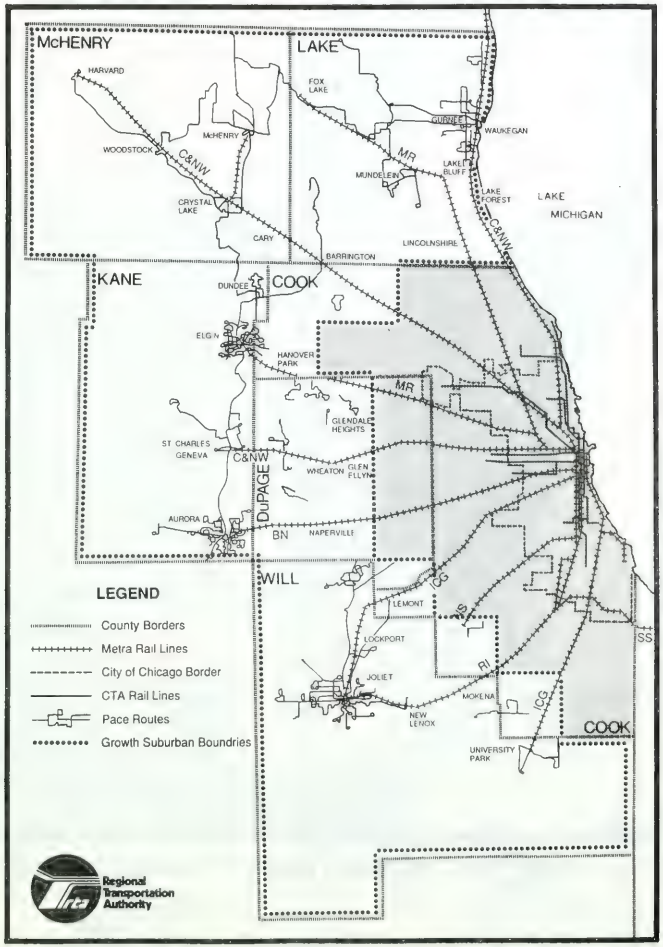
Stable Suburban Market Service



Market: GROWTH SUBURBAN MARKET
Recommended Strategy: Establish, Extend

- Lowest market share (approximately 5 percent) of all markets with the highest opportunity.
- Traditional transit services have not penetrated well due to dispersion and low density.
- Alternative transit delivery concepts, such as paratransit, need to be explored, planned and controlled in this market.
- Service should be structured to be node focused and initially based in selected suburban centers with existing transit service base and strong growth expectations.
- Contains trips from
  - outer suburbs to outer suburbs
  - outer suburbs to inner suburbs.

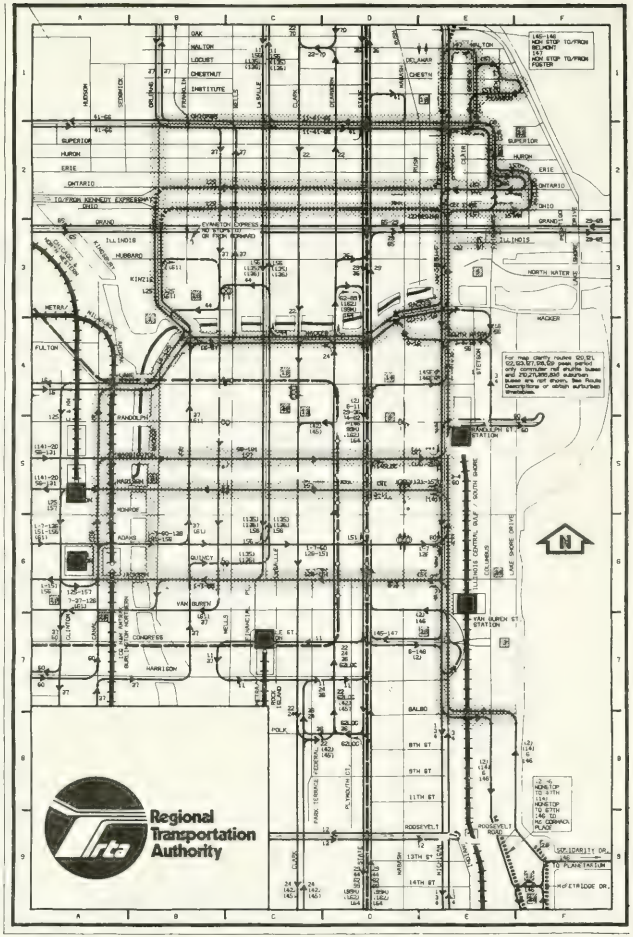
Growth Suburban Market Service



Market: CENTRAL BUSINESS DISTRICT CIRCULATION MARKET
Recommended Strategy: Restore, Renew, Expand

- A downtown distributor with a dedicated right-of-way is critical to maintain CBD-oriented market share.
- The CBD area is expanding. Residential, mid-day travel and commuter rail riders are primary users.
- The distribution function is currently served by CTA bus routes and is therefore subjected to on-street congestion.
- Ensuring direct transit access from rail stations to new developments is an advantage.
- This market contains intra-CBD trips.

CBD Circulation Market Service



III. RELATIONSHIP BETWEEN MARKETS AND SERVICE BOARDS

RELATIONSHIP BETWEEN MARKETS AND SERVICE BOARDS

- Each service board operates service that is classified in more than one market. In most cases, service is primarily in one or two markets with some minor service provided in other markets.

- This analysis covers CTA rail, Metra, and Pace in detail. It includes a market characterization and an analysis of 1985 versus 1986 ridership and performance measures.

- Ridership data from CTA bus was not available at the route level for 1985. During 1985, the CTA was in the midst of a phased installation of electronic fareboxes, equipped to capture route level ridership data. Hence, CTA bus data is included in the market characterization part of the analysis only.

- Since ridership on the CTA bus system is approximately two thirds of total RTA system ridership, a special study of this service has been proposed. Discussions are currently underway with the CTA to do a comprehensive analysis of CTA bus service. A two-phase System Structure and Utilization Study is proposed to commence in May to look at service utilization by market and develop recommendations for data that should be collected on an ongoing basis. The second phase of the project will focus on how the markets are currently served, and make suggestions as to how they should be served.

- With the information currently available from the service boards, it is not always possible to accurately isolate the ridership attributable to each market that a service board serves. Recommendations are made as to what data is needed to facilitate market level analysis.

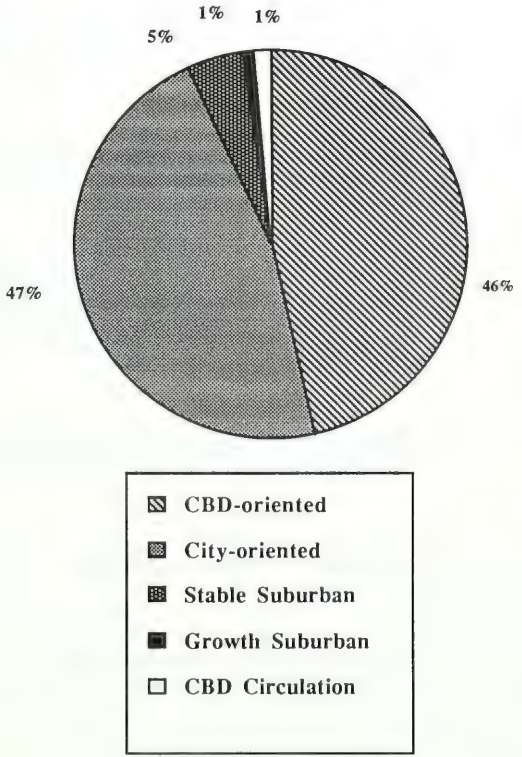
- The ridership addressed in this analysis is unlinked ridership. An unlinked trip is counted each time a passenger boards a vehicle while making a one-way trip. Unlinked ridership is regularly reported and available. In order to analyze linked ridership on a market level, significantly more data is needed concerning the interaction of riders/service boards.

SERVICE BOARD / MARKET MATRIX

	CTA bus	CTA rail	Metra	Pace
CBD-oriented	x	x	x	•
City-oriented	x	x	-	-
Stable Suburb	•	•	•	x
Growth Suburb	-	-	-	x
CBD Circulation	x	•	-	-

x = significant amount of service in this market
• = small amount of srevice in this market
- = no measurable service in this market

RTA Ridership by Market



- Each market is served by one or more service boards.
- Each service board provides service in more than one market.
- The CBD-oriented market (46% of RTA ridership) is served primarily by CTA bus, CTA rail and Metra.
- The City-oriented market (47% of RTA ridership) is served by CTA bus and rail.
- The Stable Suburban market (5% of RTA ridership) is served primarily by Pace, with service also provided by CTA bus, CTA rail and Metra.
- The Growth Suburban market (1% of RTA ridership) is served almost exclusively by Pace.
- The CBD Circulation market (1% of RTA ridership) is served primarily by CTA bus.
- The market structure analyzed in Booz-Allen & Hamilton report examined AM peak period work trips only. A comparison of ridership distribution by market between peak period work trips and total trips is shown below.

	AM peak work trips	All trips
CBD-oriented market	54%	46%
City-oriented market	30	47
Stable Suburban market	12	5
Growth Suburban market	3	1
CBD Circulation	1	1

The difference between these two sets of numbers are in the direction that would be expected. Since the largest portion of CBD-oriented ridership is work trip related, it is logical, for example, that the peak period share of CBD-oriented trips would be higher than the all day share.

IV. MARKET LEVEL ANALYSIS

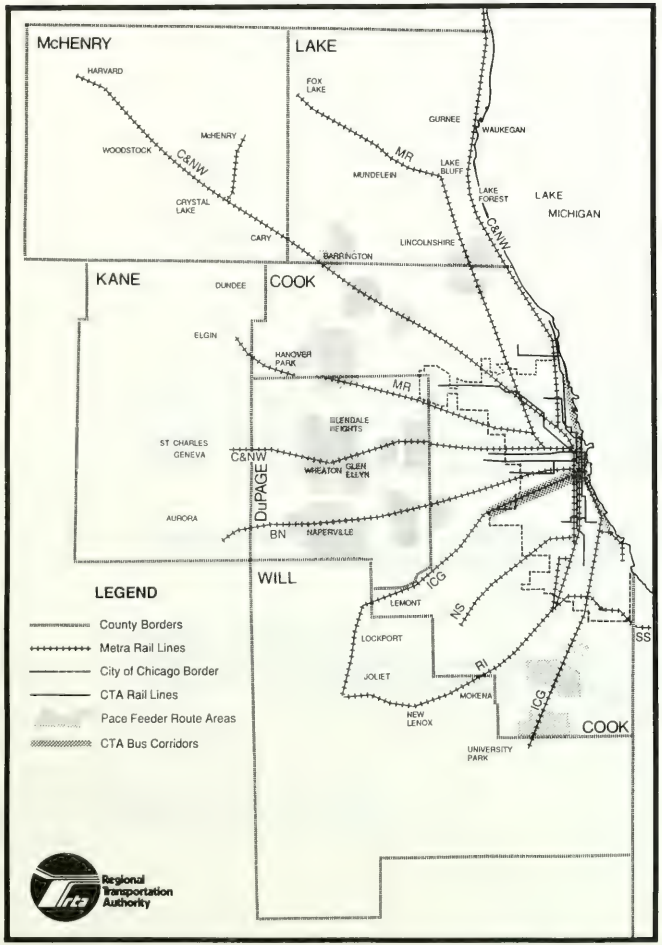
MARKET LEVEL ANALYSIS

- In this section, a detailed analysis of each market is undertaken. The analysis of each market looks at two components - market characterization (what is in the market), and performance analysis (what happened to various performance measures between 1985 and 1986).

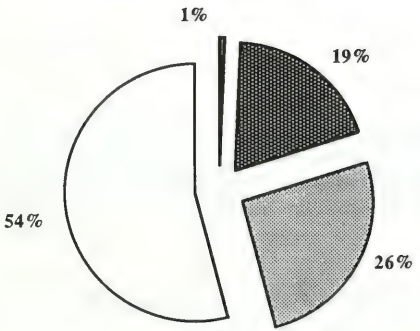
- The performance measures to be analyzed for the change between 1985 and 1986 are ridership, average fare, service units, passengers per service unit, and revenue per service unit.

- Some comparisons cannot be made at the current time due to the lack of market level data availability. In some cases, the market level data could not be isolated from the existing data. Additionally, due to the magnitude of the CTA bus system (approximately two thirds of RTA system ridership) a separate study - System Structure and Utilization Study - has been proposed to CTA staff. It is currently anticipated that the System Structure and Utilization Study will commence this month.

CBD-Oriented Market Service



CBD-oriented Market



TRADITIONAL CBD-ORIENTED MARKET ANALYSIS

- Service in the CBD-oriented market is provided by CTA bus, CTA rail, Metra and Pace

- Both CTA bus and rail service have CBD-oriented and City-oriented components of ridership. CTA rail service is physically CBD-oriented, but the ridership on the rail system is split between the CBD-oriented and the City-oriented markets. CTA bus serves a large number of CBD-oriented trips, primarily by the North and South Lakeshore corridor routes and the Archer corridor routes. This analysis is based on total CTA rail ridership data. CTA rail ridership cannot be precisely identified by market with currently available data.

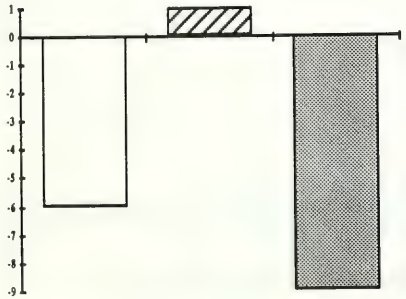
- Metra ridership is primarily CBD-oriented. Some reverse riding and intermediate station riding will be addressed in the analysis of other markets.

- Pace's commuter rail feeder bus service and routes to downtown are also considered to be in the CBD-oriented market.

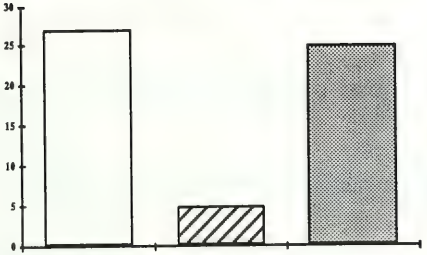
- 46% of RTA annual system ridership is in the CBD-oriented market.

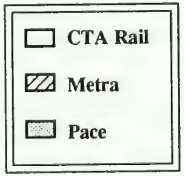
- 1986 ridership in this market was
  - 54% CTA bus
  - 26% CTA rail
  - 19% Metra
  - 1% Pace

Ridership Change

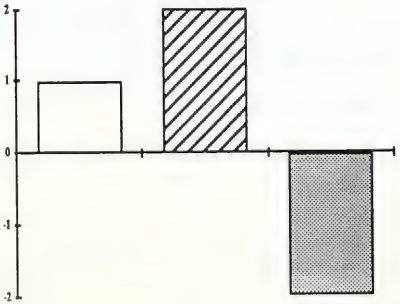


Average Fare Change





Service Unit Change



- **Ridership Change** between 1985 and 1986:

  - CTA rail -6%
  - Metra 1%
  - Pace -9%

- The ridership changes in the CBD-oriented market appear to match expected results. A larger ridership decrease would be expected on Pace and CTA due to larger relative fare increases in 1986 when compared to Metra.

- **Average Fare Change** between 1985 and 1986:

  - CTA rail 27%
  - Metra 5%
  - Pace 25%

- The average fare increases on Metra and Pace represent the change in average fare experienced by passengers using those modes. The nominal CTA rail fare did not increase by 27 percent, rather more people were observed to be paying their full fare at the rail station, as opposed to paying their full fare on the bus system and using a transfer to enter the rail station.

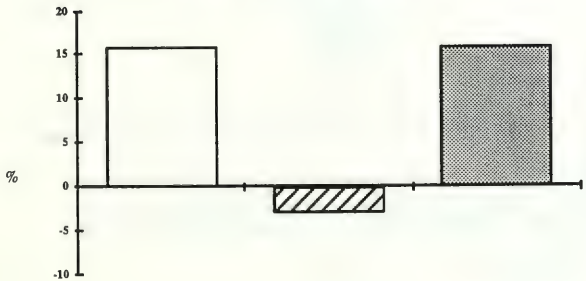
- **Service Unit Change** between 1985 and 1986:

  - CTA rail 1%
  - Metra 2%
  - Pace -2%

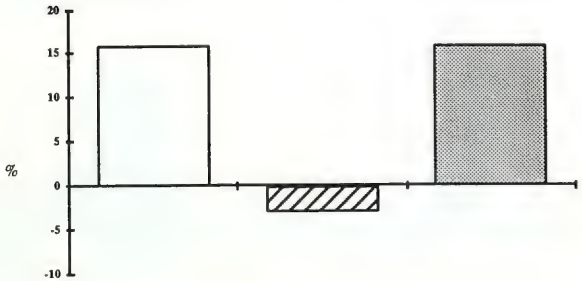
- For Metra and CTA rail, service units are revenue car miles. For Pace, service units are revenue vehicle hours. CTA's 1% increase in revenue car miles was due to service increase on the West-Northwest line. Metra added service on the Rock Island line, causing most of the increase in service units. Pace reduced revenue vehicle hours by 2 percent in the CBD-oriented market in 1986.

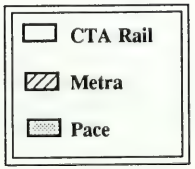
- Service Units are revenue vehicle miles for CTA and Metra, and revenue vehicle hours for Pace.

Pass./Service Unit Change



Revenue/ Service Unit Change





- **Passengers per Service Unit Change** between 1985 and 1986:

  - CTA rail -7%
  - Metra -2%
  - Pace -7%

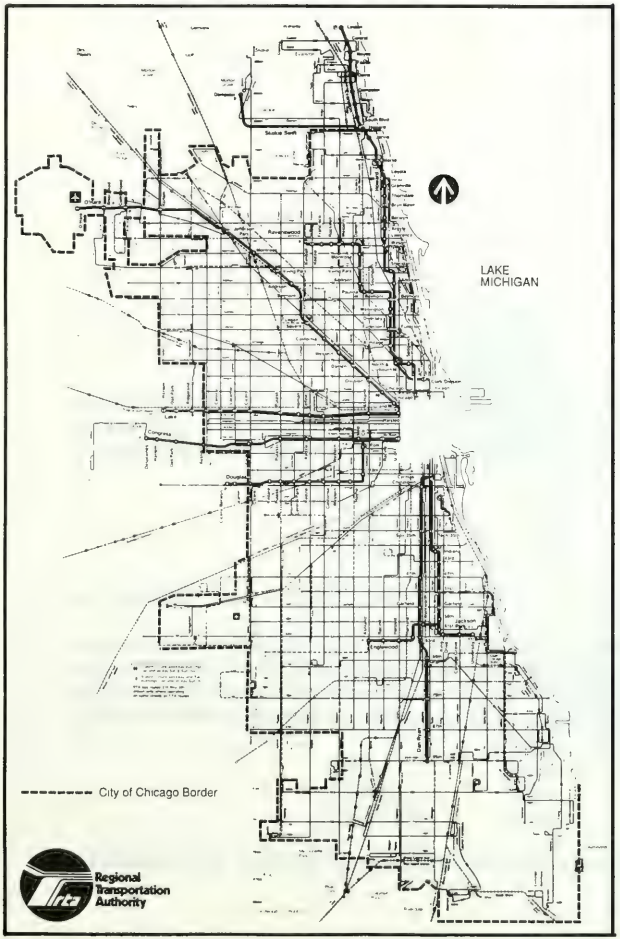
- Passengers per service unit (a measure of productivity) decreased for all service boards in this market. With the exception of Pace, passengers per service unit decreased a greater percentage than the absolute change in passengers. This indicates that service was increased by a greater amount than ridership increased (or decreased). Pace feeder service was adjusted in the direction of the ridership changes. Metra showed the smallest decrease in productivity from 1985 to 1986.

- **Revenue per Service Unit Change** between 1985 and 1986:

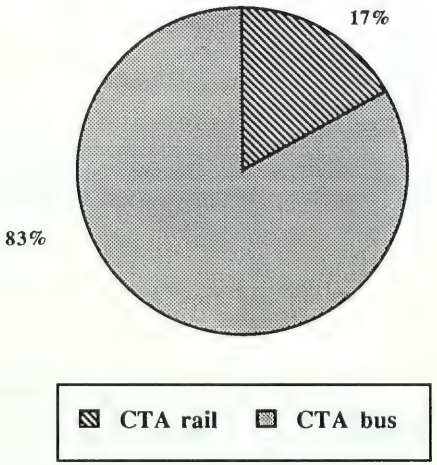
  - CTA rail 16%
  - Metra -3%
  - Pace 16%

- Due to the fare increases, revenue for all service boards increased. Correspondingly, the measure revenue/service unit increased for both CTA rail and Pace, although by a percentage smaller than the percentage revenue increase. Metra's revenue/revenue car mile decreased slightly due to their smaller fare increase and the addition of new service.

Traditional City-Oriented Market Service



City-oriented Market



TRADITIONAL CITY-ORIENTED MARKET

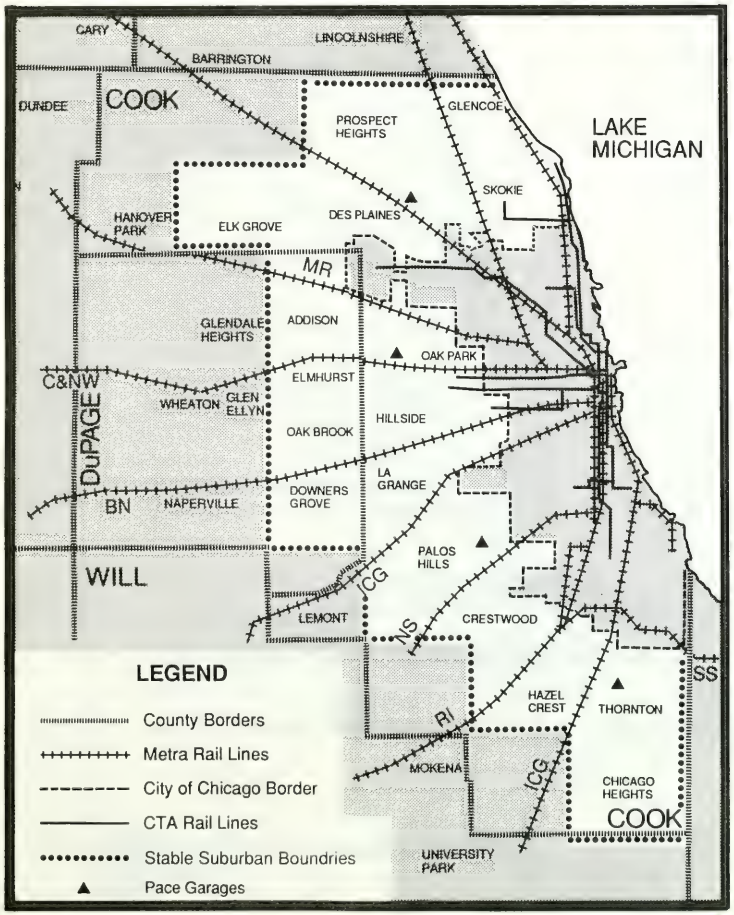
- The City-oriented market represents 47% of RTA system annual ridership

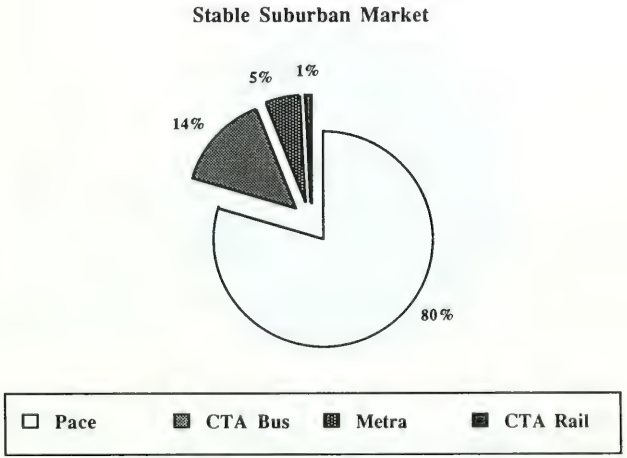
- CTA is the only service board serving this market with

  - 83% of the ridership served by CTA bus
  - 17% of the ridership served by CTA rail.

- A detailed analysis and understanding of the City-oriented market will not be available until the CTA System Structure and Utilization Study is completed.

Stable Suburban Market Service





STABLE SUBURBAN MARKET

- The stable suburban market represents 5% of the RTA system annual ridership.

- Ridership in the stable suburban market is carried by :
  - 80% Pace
  - 14% CTA bus
  - 5% Metra
  - 1% CTA rail.

- **Ridership Change** between 1985 and 1986:
  - Pace -8%

- The ridership results for the Stable Suburban market component of Pace ridership were in the range of the ridership decreases that would be expected as a result of a fare increase.

- **Average Fare Change** between 1985 and 1986:
  - Pace 16%

- The average fare increase in the Stable Suburban market component of Pace ridership of 16% is likely the major contributor to the loss in ridership in this market.

- **Service Unit Change** between 1985 and 1986:
  - Pace 2%

- Service Units are revenue vehicle hours.

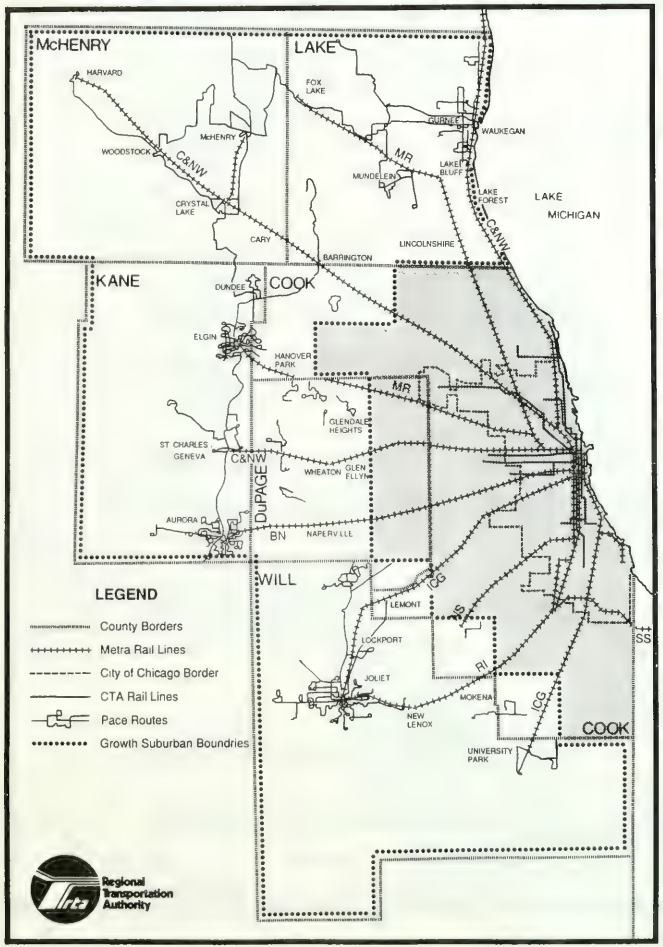
- Revenue vehicle hours increased by 2 percent while ridership was decreasing in this market by 8 percent.

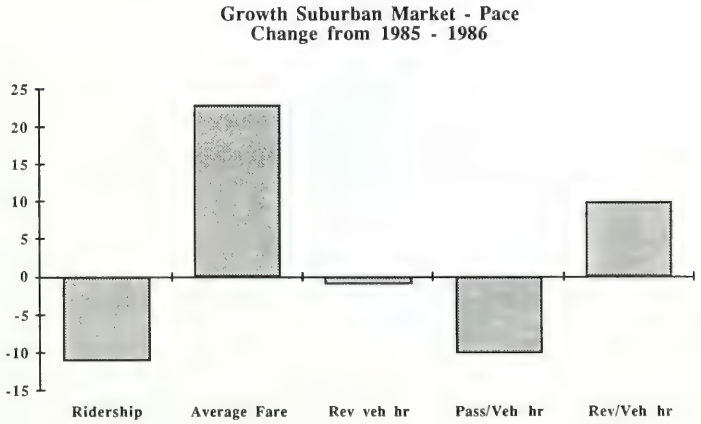
- **Passengers per Revenue Vehicle Hour Change** between 1985 and 1986:
  - Pace -10%

- The combination of a ridership loss and an increase in service provided caused the significant decrease in this measure of productivity.

- **Revenue per Revenue Vehicle Hour Change** between 1985 and 1986:
  - Pace 4%

Growth Suburban Market Service





- The growth suburban market represents 1% of the RTA system annual ridership.

- The market is served exclusively by Pace.

- **Ridership Change** between 1985 and 1986:
  - Pace -11%

- The ridership results for the Growth Suburban market component of Pace ridership were in the range of the ridership decreases that would be expected as a result of the two fare increases experienced in the Kane County portion of the market.

- **Average Fare Change** between 1985 and 1986:
  - Pace 23%

- The average fare increase in the Growth Suburban market component of Pace ridership of 23% is the major contributor to the loss in ridership in this market. Interestingly, this market lost approximately the same percentage of riders per percentage increase in fare as the Stable Suburban market.

- **Revenue Vehicle Hour Change** between 1985 and 1986:
  - Pace -1%

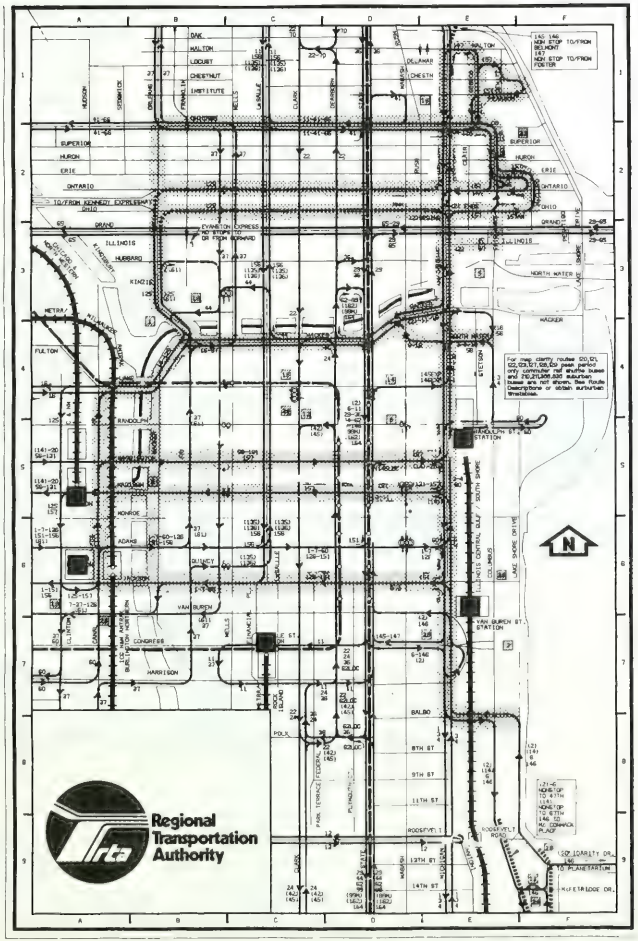
- Revenue vehicle hours decreased by only 1 percent while ridership decreased by 11 percent.

- **Passengers per Revenue Vehicle Hour Change** between 1985 and 1986:
  - Pace -10%

- The combination of a large ridership loss and a slight decrease in service caused the significant decrease in this measure of productivity in this market.

- **Revenue per Revenue Vehicle Hour Change** between 1985 and 1986:
  - Pace 10%

CBD Circulation Market Service



CBD CIRCULATION MARKET

- The CBD Circulation market is estimated to represent approximately 1% of the 1986 RTA system annual ridership.
- This market is predominantly served by CTA bus.
- Detailed information on this market will not be available until the CTA System Structure and Utilization Study is completed.

V. CONCLUSIONS

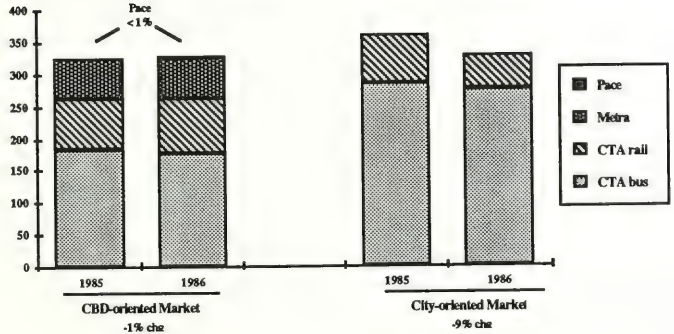
Overall Conclusions

- The current RTA approach for fare and service level changes is not consistent with a market-driven approach as recommended in the Strategic Plan.

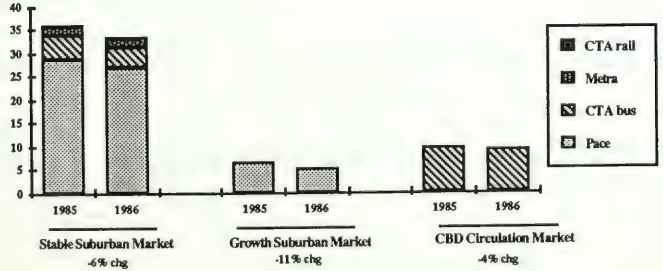
- Data and information systems are not in place to permit the type of analysis needed to support market-driven analysis.

- The market-driven approach offers a practical and potentially valuable framework for developing regional policies that will guide market expansion, foster cost containment, and maximize long term investments.

Market Ridership Comparison
1985 and 1986
(in millions)



Market Ridership Comparison
1985 and 1986
(in millions)



Market Specific Conclusions

CBD-oriented Market - 46% of RTA ridership

- The fare and transfer policy changes implemented in 1986 appear to have affected the modal split in this market - CTA bus declined while rail (Metra and CTA rail) increased.

City-oriented Market - 47% of RTA ridership

- No conclusions regarding the City-oriented market are possible at this time. Phase I of the System Structure and Utilization Study should provide significant insights on this market.

Stable Suburban Market - 5% of RTA ridership

- This market is apparently more sensitive to price increases than had been anticipated. Therefore, cost containment must be a high priority if market share (currently 7% of work trips) is to be protected and increased.

Growth Suburban Market - 1% of RTA ridership

- This market, which is identified in the Strategic Plan as having the highest growth potential, experienced the largest relative fare increase. This clearly contradicts accepted business principles for encouraging market growth as demonstrated by the 11% decline in passengers in 1986.

CBD Circulation Market - 1% of RTA ridership

- No definitive conclusions are possible, but it is clear that the relationship between the CBD-oriented and the CBD Circulation markets needs to be better understood. The CTA System Structure and Utilization Study should begin to provide an understanding of this market.

VI. FUTURE DIRECTIONS

If a market-driven approach is to be adopted, then market-level analysis must provide useful guidance to RTA and service board policy makers. This will require more precise methods for tracking results at a market level. Some of the key data needed to achieve this goal are:

- Linked trips
- Passenger miles
- Revenues
- Expenses
- Revenue hours for Metra and CTA
- Quality of service data.

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